

FINAL REPORT

WILDLIFE AND WILDLIFE HABITAT

MITIGATION PLAN FOR LIBBY HYDROELECTRIC PROJECT

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Prepared by

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PREFACE

This document (Phase II) presents a mitigation and enhancement plan for the Libby Dam hydroelectric project. It discusses options available to provide wildlife protection, mitigation, and enhancement in accordance with the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Public Law 96-501). The options focus on mitigation for wildlife and wildlife habitat losses attributable to the construction and operation of Libby Dam. These losses previously were estimated from the best available information concerning the degree of negative and positive impacts to target wildlife species during Phase I (Yde and Olsen 1984).

To determine that satisfactory mitigation will be achieved, it was necessary to establish specific mitigation objectives and evaluate the degree to which individual options were responsive to those objectives. Criteria by which mitigation measures were evaluated were similar to those by which wildlife and wildlife habitat losses were estimated (Yde and Olsen 1984). They also were evaluated according to anticipated benefits for target and non-target species; feasibility and cost-effectiveness; consistency with the Fish and Wildlife program, the Council's criteria for land acquisition, the Montana Department of Fish, Wildlife and Parks' draft mitigation policy and long-range planning process; and comments received during inter-agency coordination.

This mitigation and enhancement plan specifically addresses big game species (white-tailed deer, mule deer and bighorn sheep), Columbian sharp-tailed grouse, waterfowl, and bald eagles. It is assumed mitigation and enhancement for most of the other target species impacted by the Libby Dam project will occur as secondary benefits. Additional study is required to develop opportunities for mitigation and enhancement to benefit grizzly bear and aquatic furbearers.

The Libby Dam project was built to provide hydroelectric generation, flood control and related water uses (U.S. Dept. Army 1971). Because the reservoir must be at full-pool during part of the year to satisfy hydroelectric demands (both on-site and downstream), the negative impacts to the wildlife resource as defined by Yde and Olsen (1984) can be attributed to hydroelectric generation.

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I. INTRODUCTION

Libby Dam and Lake Koocanusa are located in northwestern Montana, 219 miles upstream from the confluence of the Kootenai and Columbia Rivers and about 17 miles upstream from Libby, Montana (Fig. 1). Graham et al. (1981) described the basin in which Lake Koocanusa is located, and they described the Libby Dam project and its operation.

Impoundment at Libby Dam began in 1972; full pool was reached by 1974. The reservoir inundated 52.5 miles of habitat associated with two rivers and 48.8 miles of habitat associated with tributary streams within Montana. At full pool, Lake Koocanusa occupies 46,500 acres of which 28,850 acres lie in Montana. In addition to the 28,859 acres of wildlife habitat inundated by the reservoir, 2,000 acres of habitat were lost or modified due to the relocation of the Burlington Northern (formerly Great Northern) railroad grade, over 2,100 acres of habitat were lost or altered due to construction of Highway 37 along the east side and the Forest Development Road along the west side of the reservoir.

The Libby Dam project was authorized by the Flood Control Act of 1950, (Public Law 516). That act contained no consideration for the wildlife resource of the Area. Pursuant to the Fish and Wildlife Coordination Act of 1958 (Public Law 85-62), an assessment of the impacts to the wildlife resources (U.S. Dep. Inter. 1965) was prepared. The report became the basis for the development of measures to mitigate the impacts to the diverse wildlife communities which inhabited the Kootenai River Valley prior to construction of the Libby Dam project. These measures, although well intended, were not sufficient to fully mitigate for the wildlife losses and were not planned to provide mitigation for the life of the project.

The Water Resources Development Act of 1974 (Public Law 93-251) authorized the expenditure of \$2,000,000 for acquisition of up to 12,000 acres of wildlife grazing lands to mitigate habitat losses resulting from the overall Libby Dam project. The Montana Department of Fish, Wildlife and Parks, acting as a consultant to the U.S. Army Corps of Engineers, identified and prioritized several parcels of suitable wildlife habitat that qualified as wildlife replacement lands. During the late 1970's three separate parcels, totalling 2,443.81 acres, were acquired by the U.S. Army Corps of Engineers before the \$2,000,000 was exhausted. Titles to these lands were subsequently transferred to the Montana Department of Fish, Wildlife and Parks.

The Northwest Power Planning Council, pursuant to the Northwest Power Act of 1980, adopted the Columbia River Basin Fish and Wildlife Program. This Program, with funding support from Bonneville Power Administration (BPZ), directed states or other

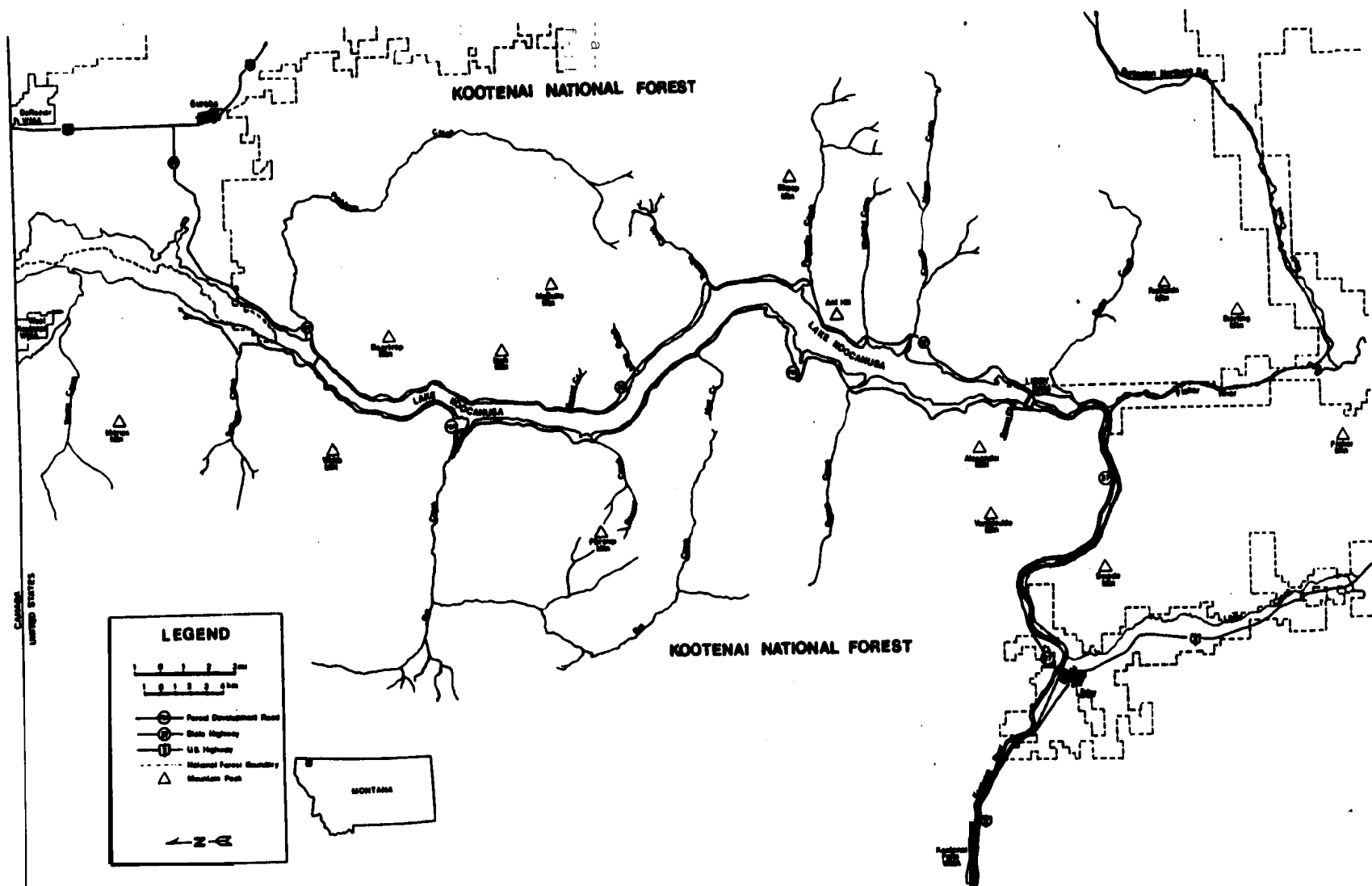


Fig. 1. Map of the area of concern.

entities to assess the probable wildlife and wildlife habitat losses at hydroelectric projects in the Columbia River Basin using existing data. Following this assessment, the program required the development of mitigation status reports and mitigation and enhancement plans for specific projects. The program also indicated Council would consider approving suitable off-site wildlife range acquisitions as mitigation for the remaining balance of 9,500 acres of land previously authorized by Congress but not acquired.

In response to the Fish and Wildlife Program an assessment of wildlife impacts and a summary of previous mitigation related to Libby Dam project was prepared (Phase I) (Yde and Olsen 1984). A target species list was developed to identify the primary species impacted by the project and those of primary concern to the Montana Department of Fish, Wildlife and Parks. Acreage of the 15 principle habitat types, inundated by the reservoir, were estimated from aerial photography (Table 1) (Yde and Olsen **1984:13**). For each of the target species, the area of critical habitat impacted by the project was determined. Thereafter, it was possible to develop qualitative and quantitative estimates of the losses incurred by those species (Table 2) (Yde and Olsen **1984:76,77**). These loss estimates provide a basis to evaluate the previous wildlife mitigation efforts, and thereby complete the mitigation status report. They also provide a basis to establish quantified objectives to be accomplished through a preliminary mitigation and enhancement plan for the Libby Dam project.

Table 1. Summary of habitat mapping units inundated by Lake Koocanusa (Yde and Olsen 1984).

Habitat Mapping Unit	Acres Inundated				Percent of Total
	Terrestrial			Total	
	Non-Island	Island	Other		
Aquatic					
River			3,285	3,285	11.4
Standing water			29	29	0.1
Gravel Bar	658	297		955	3.3
Grass	1,583	0		1,583	5.5
Sub-irrigated grassland	2,933	471		3,404	11.8
Shrubriparian	431	236		667	2.3
Cottonwood riparian	583	290		873	3.0
Mixed riparian	2,116	395		2,511	8.7
Upland shrub	159			159	0.6
warm, dry conifer	7,159			7,159	24.8
Cool, dry doughs-fir	448			448	1.6
Cool, moist douglas-fir	5,143			5,143	17.8
Cold, dry subalpine conifer	60			60	0.2
Warm, mist conifer	2,149			2,149	7.4
Talus	16			16	0.1
Developments	409			409	1.4
Total	23,847	1,689	3,314	28,850	100.0

Table 2. Summary of loss estimates for selected target species affected by construction of the Libby Dam project on the Kootenai River, Montana (Yde and Olsen 1984).

Species (group)	Impacts	Qualitative	Loss Estimate	
			Quantitative	
			Number of Animals	Acres
White-tailed Deer	Loss of winter range	High	1,467-2,221	12,027
Mule Deer	Loss of winter range	High	716	12,180
	Traffic related mortalities		200-300	---
	Loss of spring range			4,987
Bighorn Sheep	Loss of winter/spring range	High	78-102	4,350
Elk	Loss of seasonal habitat	Negligible	Negligible	Negligible
Moose	Loss of seasonal habitat	Low	5-15	---
	Railroad related mortalities		20-40	---
Black Bear	Loss of seasonal habitats; foraging areas; denning sites	High	43	---
Grizzly Bear	Loss of seasonal habitats;	Low-moderate	---	---
Mountain Lion	Loss of year-round habitat	Moderate	---	---
	Loss of white-tailed deer prey base;		1,467-2,221	12,027
	Loss of mule deer prey base			
	Winter range		716	12,180
	Spring range		---	4,987
	Traffic related mortalities		200-300	---
	Loss of bighorn sheep prey base		78-102	4,350
Furbearers				
Beaver	Loss of habitat, food source, dens	High	---	---
Muskrat	Loss of habitat	Moderate	---	---
River Otter	Loss of habitat	Moderate	14-31	---
Mink	Loss of habitat	Moderate	---	---
Pine Marten	Loss of habitat	Moderate	---	---
Lynx	Loss of habitat	Low	---	---
Bobcat	Loss of habitat	Moderate	---	---

Table 2. Continued

Species (group)	Impacts	Loss Estimate		
		Qualitative	Quantitative	
			Number of Animals	Acres
Upland Gamebirds				
Ruffed Grouse	Loss of year-round habitat	High	---	---
Blue Grouse	Loss of breeding and seasonal habitat	Moderate	---	---
Spruce Grouse	Loss of year-round habitat	Low	---	---
Columbian Sharp-tailed Grouse	Loss of year-round habitat	Low	---	---
Waterfowl				
Canada Goose	Loss of breeding, nesting, and brood rearing habitat for each species	Moderate-high	---	---
Mallard		Moderate	---	---
American Wigeon		Negligible	---	---
Wood Duck		Low-moderate	---	---
Barrow's Goldeneye		Low	---	---
Common Goldeneye		Moderate	---	---
Harlequin Duck		Low-moderate	---	---
Bald Eagle	Loss of winter habitat	Moderate	16-19	---
Osprey	Increased nesting habitat	Low (positive)	---	---

II. METHODS

A. CRITERIA

An analysis of habitats inundated by Lake Koocanusa, a target species list, and an assessment of probable impacts to those species were previously prepared (Yde and Olsen 1984). Similar procedures were used to assess previous mitigation efforts, establish mitigation objectives, and to evaluate mitigation alternatives.

Mitigation objectives and recommended alternatives also were evaluated by the following criteria:

- a) Benefits to the primary target species;**
- b) Number of target species benefited;**
- c) Benefits to other species;**
- d) Feasibility and cost effectiveness;**
- e) Consistency with Northwest Power Act of 1980 (P.L. 96-501) and the Northwest Power Planning Council's Columbia River Fish and Wildlife Program;**
- f) Consistency with the Council's land acquisition criteria;**
- g) Consistency with the Montana Department of Fish, Wildlife and Parks draft mitigation policy (Appendix A);**
- h) Consistency with the Montana Department of Fish, Wildlife and Parks long range planning process; and**
- i) Responsiveness to comments received during interagency coordination.**

Accordingly, mitigation alternatives were selected that provide opportunities to ~~simultaneously~~ benefit several species; to do so as close as possible to the Libby Dam Project area; and to take place on lands managed by other entities for which mitigation projects, implemented through cooperative agreement, would be compatible with current land management policy. Acquisition is specified where cooperative agreements are not feasible. In that circumstance, conservation easements are preferable to acquisition by fee-title.

B. EVALUATION OF PREVIOUS MITIGATION

Previous mitigation measures included land acquisition and habitat manipulation. To estimate mitigation credits for acquired lands, it was assumed target species present on these lands occur in densities similar to those estimated for the Kootenai River Valley prior to impoundment (Yde and Olsen 1984). Although no "new" animals are being produced in northwestern Montana as a result of acquisition, full mitigation credit (both animal-for-animal and acre-for-acre replacement) was assigned for target species occupying the acquired lands.

Habitat manipulations were evaluated according to the Recommended Treatments and Successional Curves in the Wildlife Surveys Handbook (FSH **2609.21 R1**, as amended) to determine expected increases in forage production and the expected duration of that increase. Individual projects that should have stimulated increased forage production were identified. The acreage of each project was reduced by a fraction equal to the anticipated duration of the benefit divided by 100 years (an estimate of the expected life of the Libby Dam project). Full credit, on an acre-for-acre and an animal-for-animal basis, then was assigned in the amount of that value for each of the appropriate target species.

C. EVALUATION OF MITIGATION ALTERNATIVES

Mitigation objectives were determined by reducing the estimated losses of each target species by the respective mitigation credits. The overall mitigation objective is to replace all of the losses of target species attributable to Libby Dam project. This shall be accomplished by intensively managing appropriate lands to increase the carrying capacity for the species, where this potential exists.

Numbers of animals present at the initiation of a mitigation project, on lands selected for intensive management, do not contribute to replacement unless those animals are imminently jeopardized by a conflicting land use. Rather, replacement results from the increased carrying capacity and the associated production of "new" animals.

The degree to which carrying capacity can be increased is not known. Moreover, the potential will vary by species, present land use, habitat quality, and management intensity. No increases may be possible in some situation. For purposes of the analysis, it was assumed; 1) it is realistically possible to increase carrying capacity for all target species by one-third (0.33); 2) present densities are similar to those estimated for the Kootenai River Valley prior to impoundment; 3) replacement animals are the difference between the present density and a density value

increased by one-third (**0.33**); and 4) the land area required to produce complete replacement or animal losses on already occupied wildlife habitats, attributable to the Libby Dam project is calculated using the following equation:

$$X = A/C(0.33)$$

X = Unknown number of acres to be treated

A = Number of animals lost (target species goal)

C = Current density (animals/acre)

Essentially, this formula states that for enhancement projects proposed on lands already occupied by target wildlife species, it takes 3 acres to every 1 lost to replace the number of animals lost

Each Target species was evaluated, relative to those assumptions, to determine the degree to which reasonable mitigation measures will actually yield sufficient mitigation. Where the ~~potential to increase carrying capacity was deemed inappropriate,~~ alternatives entailing the protection of critical habitat (by conservation easement, fee-title acquisition or ~~management plans~~) were sometimes proposed. Where acquisition by conservation easement or fee-title was specified, full credit on an acre-for-acre basis would be applied. Full credit would be given because these lands would contain high quality habitat characteristics and would be protected from present, as well as future, detrimental impacts.

III. RESULTS

A. MITIGATION STATUS

Partial mitigation of impacts to wildlife and wildlife habitat impacts, attributable to the construction of the Libby Dam project, has accrued from previous efforts to acquire land and to manipulated wildlife habitat. The Water Resources Development Act of 1974 (Public Law 93-251) authorized the expenditure of \$2,000,000 for acquisition of up to 12,000 acres of wildlife grazing lands in mitigation for the Libby Dam project. A total of 2,443.81 acres, in 3 separate parcels, was acquired by the U.S. Army Corps of Engineers before the \$2,000,000 was exhausted. Those parcels were previously described (Yde and Olsen 1984). Also, the Kootenai National Forest, with funds provided by the U.S. Army Corps of Engineers, conducted habitat manipulations for the improvement of 6,596 acres of big game winter range and 157 acres, or 5 units, to benefit waterfowl. These mitigation measures were evaluated, according to the criteria used to estimate wildlife losses, to likewise estimate appropriate mitigation credits (Table 3, Appendix B).

1) Land Acquisition

The DeRozier unit includes 1,417 acres. All of this acreage is used by mule deer in spring. Approximately 617 acres provide mule deer winter range and habitat for black bear, grizzly bear, ruffed grouse, and blue grouse. About 801 acres are potentially suitable habitat for Columbian sharp-tailed grouse. Mitigation credit was assigned for these species, equivalent to acres of habitat. Credit for mountain lion was assigned on the basis of the mule deer credit.

The West Kootenai Unit includes 920.12 acres of timbered upland habitat and provides winter range for white-tailed deer, mule deer, and moose. Full credit for 920.12 acres was assigned for those species. Full credit also was assigned for mountain grouse, although the acreage is used primarily by ruffed grouse. Credit was assigned for mountain lion on the basis of the deer credits.

The Kootenai Falls Unit consists of 106.69 acres of floodplain and lower bench habitat adjacent to the Kootenai River. Full credit for that acreage was assigned for mule deer winter and spring range, bighorn sheep winter range, black bear habitat, and mountain grouse habitat. Mountain lion credit was assigned on the basis of the mule deer and bighorn sheep credits.

2. Habitat Manipulation

Big game habitat manipulations were varied and included logging, thinning and slashing, broadcast burning, and/or seeding. In conjunction with the projects, the U.S. Army Corps of Engineers also funded the Montana Department of Fish, Wildlife and Parks to monitor the vegetative and wildlife responses to the treatments. Review of the annual monitoring reports (Campbell 1972, 1973; Campbell and Knoche 1974; Knoche 1974; Knoche and Brown 1975) indicated the desired results may not have been obtained and the full potential of this mitigation measure was not realized. Even if the desired results were achieved, after a period of time the areas would need to be treated again to maintain the increased level of forage production. Without this periodic treatment, the production of big game forage will decrease and the beneficial effect of the mitigation project will be lost.

A list of all big game habitat manipulations is included in Appendix B. According to the Recommended Treatments and Successional curves, neither spring broadcast burning nor thinning is sufficient to release the forest understory vegetation. Therefore, no mitigation credit was assigned for the acres thus treated. Thinning and burning, in combination, potentially would stimulate a 3-fold increase in forage production. To maintain that increase, individual units should be treated an estimated 4 times over the life of Libby Dam project. Therefore, credit was assigned for 25 percent of the acres treated with thinning and broadcast burning.

Slashing and burning potentially yield a 5-fold increase in forage production, but 8 treatments would be required to maintain the increase. Therefore, credit was assigned for 12.5 percent of the acres treated by slashing and burning.

A total of 7 treatments would be required to maintain less than a 2-fold increase in forage production resulting from scarification. Therefore, credit was assigned for 14 percent of the scarified acres.

A summary of mitigation credit attributable to big game improvements included in Table 3. Big game enhancement projects resulted in 601 acres of mitigation credit.

Habitat improvements also took place for waterfowl on 157 acres representing 5 wetland areas (Appendix B). A total of 43 wetland acres was credited to waterfowl, moose, beaver, muskrat and mink. Partial credit on the remaining 114 acres where nest boxes were distributed was assigned to waterfowl (Table 3).

Table 3. Summary of estimated mitigation credits for selected target species affected by previous mitigation projects for the Libby Dam project.

Species	Impact	Loss			Previous Mitigation			Unmitigated Balance		
		Qualitative	No's	Acres	No's	Acres	%	No's	Acres	%
White-tailed Deer	Loss of winter range	High	1,844	12,027	148	957	8	1,696	11,070	92
Mule Deer	Loss of winter range and traffic mortalities	High	746	12,180	132	2,244	18	614	9,936	82
	Loss of spring range									
				4,987		1,524	31		3,463	69
Bighorn Sheep	Loss of winter range	High	90	4,350	6	311	7	84	4,039	93
Elk		Negligible				373				
Moose	Loss of seasonal habitat and traffic mortalities	Low	15	9,993	1	806	8	14	9,187	92
Black Bear	Loss of seasonal habitat	High	43	27,536	3	2,207	8	40	25,329	92
Grizzly Bear	Loss of seasonal habitat	Low/Moderate				617	2			98
Mountain Lion	Loss of year long habitat Loss of prey base	Moderate					11			89
River Otter	Loss of habitat	Moderate	22	101.3 mi. of river				22		100
Beaver, Muskrat, Mink	Loss of habitat	Moderate/high		101.3 mi. of river		43	1			99
Upland Furbearers	Loss of habitat	Low/Moderate		25,580		2,207	9		23,373	91
Mountain Grouse	Loss of habitat	Low/high		19,169		2,207	12		16,962	88
Sharp-tailed Grouse	Loss of habitat	Low		3,917		801	20		3,116	80
Waterfowl	Loss of habitat	Low/high		13,307		43	1		13,264	99
Bald Eagle	Loss of winter habitat	Moderate	18		0		0	18		100
Osprey	Improved habitat	Low Positive								

B. MITIGATION OBJECTIVES AND OPPORTUNITIES

1. WHITE-TAILED DEER

a) Introduction

White-tailed deer incurred high impacts, associated with the loss of 12,027 acres of winter range and an estimated loss of 1,944 animals (mid-range of 1,467 and 2,221). Previous mitigation projects provided white-tailed deer benefits on 957 acres. That mitigation was credited for 148 deer (957 acres x 0.155 deer/acre). The unmitigated balance is 1,696 deer. Assuming carrying capacity could be increased by one-third (from 0.155 to 0.207 deer/acre), intensive management would be required on 32,615 acres (1,696 deer ÷ 0.052 deer/acre = 32,615 acres).

b) Mitigation Objective

- Increase the carrying capacity of northwestern Montana by 1,696 white-tailed deer by intensively managing 32,615 acres of winter range

-or-

- Acquire 11,070 acres of white-tailed deer winter range

c) Mitigation Alternative

Lake Koocanusa inundated the majority of the white-tailed deer winter range within the area influenced by Libby Dam. Therefore, the white-tailed deer objective cannot be accomplished by on-site enhancement.

In northwestern Montana, white-tailed deer generally are associated with productive, bottomland forests. Because of that association, they are susceptible to population declines owing to conflicting land use. During recent years, declines have been associated with hydroelectric development, rural subdivisions, and intensive timber management. There is a realistic opportunity to accomplish the mitigation objective by developing and implementing silvicultural prescriptions that would be more responsive to the habitat requirements of white-tailed deer than those currently in practice. In addition, these prescriptions should take place in already productive existing white-tailed deer winter ranges. This approach is preferable to the acquisition of 11,070 acres of winter range.

The Fish and Wildlife Program directed consideration of a 9,500-acre acquisition. However, 9,500 acres would not provide sufficient mitigation relative to the white-tailed deer objective.

Moreover, the quality of land, sufficient to provide substantial increases of white-tailed deer, generally is not available in management size units and segments of the public are opposed to the acquisition.

d) Recommended Alternative

It is recommended that a project be established to develop the appropriate prescriptions, implement those prescriptions through cooperative agreements and/or conservation easements, and to reimburse participating private landowners for reduced timber revenue. Further, it is recommended an attempt be made to negotiate a conservation easement with St. Regis Paper Company to develop and implement appropriate prescriptions on 32,615 acres of company owned lands in the Fisher River drainage. This approach is responsive to the mitigation objective and the Fisher River drainage is contiguous with the Libby Dam project area.

If an agreement cannot be negotiated on St. Regis lands, it is recommended a similar project be attempted elsewhere in northwestern Montana, according to the priorities displayed in Table 4.

e) Mitigation Accounting

The recommended project to develop and implement silvicultural prescriptions, responsive to the habitat requirements of white-tailed deer, on 32,615 acres of winter range would be deemed sufficient mitigation for white-tailed deer losses attributable to Libby Ram. Alternatively, acquisition by fee-title of 11,070 acres of winter range would be considered sufficient.

f) Benefits to Other Species

The recommended project to maintain white-tailed deer winter range also should benefit elk, moose, black bear, mountain lion, pine marten, bobcat, mountain grouse, and bald eagle. Depending on the project location, benefits also may accrue to mule deer, grizzly bear, and aquatic furbearers. This project also should benefit a wide variety of forest-dependent wildlife species.

Table 4. Priority of white-tailed deer winter ranges in Northwestern Montana according to sustainability for white-tailed deer mitigation projects.^{a/}

Rank	Location	Ownership	Remarks
1	Fisher River	St. Regis Paper Co. (Champion Int'l.)	Implement cooperative agreement
2	Swan River	Plum Creek Timber Co. Flathead Nat'l Forest Dept. of State Lands Swan Rvr. State Forest	Implement cooperative agreement
3	scattered Parcels	Dept. of State Lands	Implement cooperative agreement
4	Thompson River	Champion Int'l. Plum Creek Timber Co.	Implement cooperative agreement
5b/	Fisher River	St. Regis Paper Co. (Champion Int'l.)	Acquire 11,070 acres
6	Swan River	Plum Creek Timber Co.	Acquire 11,070 acres
7	Scattered Parcels	Various	Acquire 11,070 acres

^{a/} The intent would be to negotiate a cooperative agreement on 32,615 acres with anyone or a combination of these land management entities.

^{b/} availability would influence priority

2. MULE DEER

a) **Introduction**

Mule deer incurred high impacts, associated with the loss of 12,180 acres of winter range and 4,987 acres of spring range, increased highway mortalities, and an estimated loss of 746 animals (716 lost due to loss of habitat plus annual traffic related mortalities - 30). Previous mitigation projects provided mule deer benefits on 2,244 acres of winter range and 1,524 acres of spring range. That mitigation was credited for 132 deer (2,244 acres x 0.059 deer/acre. Assuming carrying capacity could be increased by one-third (from 0.059 to 0.079 deer/acre), intensive management would be required on 30,700 acres of winter range (614 deer ÷ 0.02 deer/acre = 30,700 acres).

b) **Mitigation Objective**

- Increase the carrying capacity of northwestern Montana by 614 mule deer by intensively managing 30,700 acres of winter range

-or-

- Acquire 9,936 acres of mule deer winter range

c) **Mitigation Alternatives**

Lake Koocanusa inundated only portions of the mule deer range and healthy populations persist adjacent to the reservoir. Habitats occupied by these populations have been influenced by several decades of fire suppression and associated successional changes. As such, there is an opportunity to increase forage production on mule deer winter/spring range through habitat enhancement. Several attempts to enhance mule deer habitat already have been made; but, most failed to accomplish meaningful mitigation. However, a few units were either selectively timber harvested or slashed and afterwards treated with prescribed fire. In these areas, the treatment was sufficient to stimulate increased forage production and the residual stands were sufficient to provide protection from inclement weather. Moreover, these stands can be maintained with periodic treatment.

d) **Recommended Alternative**

It is recommended mitigation for mule deer be accomplished through habitat enhancement on Kootenai National Forest lands adjacent to Lake Koocanusa. Long-term habitat maintenance and enhancement plan shall be developed for the mitigation area. This plan shall specify the sequence of treatments (such as selective timber harvest, appropriate intermediate treatments, and periodic broadcast burns) by unit and the frequency at which individual units will be treated. The plan also will specify appropriate means to demonstrate habitat maintenance and enhancement.

Implementation of the mitigation and enhancement plan will be coordinated with the Montana Department of Fish, Wildlife and Parks and the Kootenai National Forest. Whenever possible, habitat enhancement will be accomplished with scheduled timber harvest and costs will be carried by the sale. However, it is recognized these sales will be small and may not generate sufficient revenue to support the desired post-sale treatments. It also is recognized that it is desirable to treat many areas that are not presently suitable for a commercial operation. To be sufficient mitigation, this plan would be implemented for the life of the project.

e0 **Mitigation Accounting**

Presently, there are approximately 10,500 acres of Kootenai National Forest lands allocated to mule deer winter range on the west side of Lake Koocanusa and 14,500 acres allocated to mule deer (11,600 acres of which is also allocated to bighorn sheep) on the east side. It is estimated that habitat treatments and management on 25,000 acres will produce an additional 500 mule deer (25,000 acres x 0.02 deer/acre). This measure and previous mitigation (132 mule deer) would constitute an estimated 85% of the mitigation objective. No additional projects are proposed to replace the unmitigated balance of 114 mule deer. This project will be implemented in conjunction with the recommended bighorn sheep project described in the next session. It is assumed that mitigation for 3,463 acres of spring range will accrue from measures to maintain and enhance winter range.

Alternatively, acquisition by fee-title of 9,936 acres of mule deer winter range would be deemed sufficient mitigation.

f) **Benefits to Other Species**

The recommended project to enhance mule deer winter habitat also should benefit white-tailed deer, elk, moose, black bear, mountain lion, pine marten, lynx, bobcat, mountain grouse, bald eagle, and a variety of forest-dependent wildlife species. It may also benefit grizzly bear. Where mule deer and bighorn sheep are sympatric, mule deer benefits would accrue from measures to enhance sheep habitat.

3. BIGHORN SHEEP

a) **Introduction**

Bighorn sheep incurred high impacts, associated with the loss of 4,350 acres of winter range and an estimated loss of 90 animals (mid-range of 78 and 102). Previous mitigation projects provided bighorn sheep benefits on 311 acres. That mitigation was credited for 6 bighorn sheep ($\{90 \text{ sheep} \div 4,350 \text{ acres}\} \times 311 \text{ acres}$).

b. Mitigation Objective

-Increase the carrying capacity of northwestern Montana by 84 bighorn sheep

-or-

- Acquire 4,039 acres of bighorn sheep winter/spring range

c) **Mitigation Alternatives**

Lake Koocanusa inundated only portions of the bighorn sheep range and a viable population persists adjacent to the reservoir. There are opportunities to enhance bighorn sheep habitat with scheduled timber harvest and prescribed fire in a manner consistent with Brown's (1978) recommendations. However, the present population is small and the bighorn sheep is not a pioneering species. Thus, the population may not respond favorably to enhancement efforts.

d) **Recommended Alternative**

It is recommended that mitigation for bighorn sheep be accomplished through habitat enhancement on 11,600 acres of Kootenai National Forest lands allocated to both mule deer and bighorn sheep on the east side of the reservoir. A long-term habitat maintenance and enhancement plan shall be developed for the mitigation area. This plan will specify the sequence of treatments and the frequency at which individual acres will be maintained. Treatments will be prescribed specifically to benefit bighorn sheep, and it will be assumed benefits also will accrue to mule deer on the 11,600 acres allocated to both mule deer and bighorn sheep. Generally, the plan will feature scheduled timber harvest and prescribed fire. Certain acres, especially spring range, also may require seeding of desirable grass and forb species, fertilization, and irrigation. The plan also will specify appropriate means to demonstrate habitat maintenance and enhancement is being accomplished. Because of the precarious position of the Ural-Tweed Sheep herd, the plan will include measures to monitor the population and its response to habitat enhancement. It also will provide a contingency for sheep transplants to this area in the event the present population continues to decline. Implementation of the mitigation and enhancement plan will be coordinated with

the Montana Department of Fish, Wildlife and Parks and the Kootenai National Forest. To be sufficient mitigation, this plan shall be implemented for the life of the project.

e) Mitigation Accounting

A project to maintain and enhance bighorn sheep habitat on 11,600 acres of occupied habitat adjacent to Lake Koocanusa shall be deemed sufficient mitigation for sheep losses attributable to Libby Dam. Alternatively, acquisition of 4,039 acres of bighorn sheep habitat shall be considered sufficient.

f) Benefits to Other Species

The recommended project to maintain and enhance bighorn sheep habitat also should benefit mule deer, elk, black bear, mountain lion, pine marten, lynx, bobcat, mountain grouse, bald eagle, and a variety of other wildlife species.

4. ELK

a) **Introduction**

Elk incurred negligible impacts attributable to Libby Dam project and **there** is no mitigation objective for the species. Previous mitigation projects provided elk benefits on 373 acres that accrued from habitat manipualtions and minor benefits that accrued from land acquisition.

b) **Mitigation Objective**

None.

c) **Mitigation Alternatives**

It is probable benefits to elk will accrue from projects for other big game species.

d) **Recommended Alternatives**

None.

e) **Mitigation Accounting**

Itisrecommended elk benefits be credited to the unmitigated portion of the mule deer objective.

f) **Benefits to Other Species**

None.

5. MOOSE

a) Introduction

Moose incurred law impacts, associated with the loss of 9,993 acres of seasonal habitat, increased highway mortality, and an estimated loss of 15 animals. Previous mitigation projects provided moose benefits on 806 acres. That mitigation was credited for 1 moose ($\{15 \text{ moose} \div 9,993 \text{ acres}\} \times 806 \text{ acres}$).

b) Mitigation Objective

-Increase the carrying capacity of northwestern Montana by
14 moose

-or-

- Acquire 9,187 acres of moose habitat

c) Mitigation Alternatives

It is probable benefits to moose will accrue from projects for other species and those benefits will exceed the mitigation objective.

d) Recommended Alternative

None.

e) Mitigation Accounting

It is recommended the proposed project for white-tailed deer be considered sufficient mitigation for moose. Moose benefits, in excess of 14 animals, shall be credited to the unmitigated balance for mule deer.

f) Benefits to Other Species

None.

7. GRIZZLY BEAR

a0 **Introduction**

Grizzly bear incurred low to moderate losses associated with the loss of seasonal habitat. Losses could not be quantified because pre-impoundment information on density and distribution was lacking. Previous mitigation projects provided grizzly bear benefits on 617 acres. That mitigation was credited for 2% replacement of grizzly bear habitat (assuming the 27,536 acres of black bear habitat were also utilized by grizzly bear).

b) **Mitigation Objective**

- Increase the carrying capacity of northwestern Montana by numbers of grizzly bear equivalent to losses attributable to Libby Dam

-or-

- Acquire 26,919 acres of grizzly bear habitat

c) **Mitigation Alternatives**

Although a mitigation objective (numbers of bears) could not be quantified, it is desirable to replace the losses attributable to Libby Dam. This is especially so because the grizzly bear is classified as a threatened species in Montana (Endangered Species Act, 1973). The project to assess wildlife impacts related to Libby Dam was intentionally general in scope. Because the grizzly bear is a sensitive species and little information is known about grizzlies in this portion of Montana, specific mitigation opportunities have not been identified.

d) **Recommended Alternative**

It is recommended a project be developed to further evaluate grizzly bear losses associated with Libby Dam and to identify specific areas where bear management could be considered mitigation for those losses. This project shall be compatible with the Grizzly Bear Recovery Plans and ongoing grizzly projects in the Cabinet-Yaak and Northern Continental Divide ecosystems.

e) **Mitigation Accounting**

Implementation of a project to assess grizzly bear losses and identify mitigation opportunities and effective implementation of appropriate recommendations which result from that project shall be deemed sufficient mitigation for grizzly bear losses attributable to Libby Dam.

7. GRIZZLY BEAR

a) Introduction

Grizzly bear incurred low to moderate losses associated with the loss of seasonal habitat. Losses could not be quantified because pre-impoundment information on density and distribution was lacking. Previous mitigation projects provided grizzly bear benefits on 617 acres. That mitigation was credited for 2% replacement of grizzly bear habitat (assuming the 27,536 acres of black bear habitat were also utilized by grizzly bear).

b) Mitigation Objective

-Increase the carrying capacity of northwestern Montana by numbers of grizzly bear equivalent to losses attributable to Libby Dam

-or-

- ~~Acquire~~ 26,919 acres of grizzly bear habitat

c) Mitigation Alternatives

Although a mitigation objective (numbers of bears) could not be quantified, it is desirable to replace the losses attributable to Libby Dam. This is especially so because the grizzly bear is classified as a threatened species in Montana (Endangered Species Act, 1973). The project to assess wildlife impacts related to Libby Dam was intentionally general in scope. Because the grizzly bear is a sensitive species and little information is known about grizzlies in this portion of Montana, specific mitigation opportunities have not been identified.

d) Recommended Alternative

It is recommended a project be developed to further evaluate grizzly bear losses associated with Libby Dam and to identify specific areas where bear management could be considered mitigation for those losses. This project shall be compatible with the Grizzly Bear Recovery Plans and ongoing grizzly projects in the Cabinet-Yaak and Northern Continental Divide ecosystems.

e) Mitigation Accounting

Implementation of a project to assess grizzly bear losses and identify mitigation opportunities and effective implementation of ~~appropriate recommendations~~ which result from that project shall be deemed sufficient mitigation for grizzly bear losses attributable to Libby Dam.

f) Benefits to Other Species

A project to assess grizzly bear losses and identify mitigation alternatives should also provide benefits to black bear. Implementation of specific measures to benefit grizzly bear could benefit a variety of forest-dependent wildlife species.

8. MOUNTAIN LION

a) **Introduction**

Mountain lion incurred moderate losses associated with the loss of year long habitat and a reduction of big game animals in the prey base. Mountain lion losses were quantified in terms of reduction in the prey base: therefore, the quantified objectives for whit-tailed deer, mule deer, and bighorn sheep also include objectives for mountain lion.

b) **Mitigation Objective**

- Increase the prey base available to mountain lion by 1,696 white-tailed deer, 614 mule deer, and 84 bighorn sheep and thereby increase the carrying capacity of northwestern Montana by numbers of mountain lion equivalent to losses attributable to Libby Dam.

c) **Mitigation Alternatives**

It is probable the proposed projects for white-tailed deer, mule deer, and bighorn sheep will provide mitigation for mountain lion. Because mountain lions are extremely territorial, move extensively over large home ranges, and are present at very low densities, habitat enhancement for prey species must occur over a very large area to effectively mitigate for mountain lion losses.

d) **Recommended Alternative**

None

e) **Mitigation Accounting**

An estimated 11% of the mountain lion objective was accomplished by previous mitigation projects. It is further estimated that those measures and the proposed big game projects would constitute 96% of the mitigation objective. The balance **would** be provided by expected increases in elk, therefore, no additional measures are proposed for mountain lion.

f) **Benefits to Other Species**

None

9. RIVER OTTER

a) Introduction

River otter incurred moderate losses associated with the loss of 101.3 miles of riverine habitat and an estimated loss of 22 animals (mid-range of 14 and 31). None of the previous mitigation projects provided benefits to river otter.

b) Mitigation Objective

-Increase the carrying capacity of northwestern Montana by
22 river otter

-or-

- Acquire 101.3 miles of riverine habitat

c) Mitigation Alternatives

It is probable river otter losses cannot be replaced through realistic projects to enhance habitat. As an alternative to replacement, it would be desirable to protect river otter from future losses associated with hydroelectric and other economic developments. Habitat requirements of river otter are more specific than those of other species considered in the evaluation of effects associated with Libby Dam. It was not possible to adequately consider this species in a general assessment.

d) Recommended Alternative

It is recommended a project be implemented to determine the current status and distribution of river otter in northwestern Montana, to identify critical river otter habitat, to evaluate habitats for potential reintroduction, and to identify opportunities for mitigation. It also is recommended this project be developed to provide mitigation for river otter losses attributable to the other hydroelectric facilities in northwestern Montana.

e) Mitigation Accounting

Implementation of a project to determine the current status and distribution of river otter and implementation of appropriate recommendations which result from that project shall be deemed sufficient mitigation for river otter losses attributable to Libby Dam.

f) Benefits to Other Species

A project to determine the current status of river otter should also provide benefits to other aquatic furbearers. Implementation of specific measures to benefit river otter also

should benefit black bear, bald eagles and a variety of species that are dependent on forested riparian habitats.

10. **FURBEARERS** (AQUATIC SPECIES)

a) **Introduction**

Beaver, muskrat, and mink incurred moderate to high losses, associated with the loss of 101.3 miles of riverine habitat. Numbers of animals lost could not be determined.

b) **Mitigation Objective**

- Increase the carrying capacity of aquatic habitats in northwestern Montana by numbers of beaver, muskrat, and mink by numbers equivalent to losses attributable to Libby Dam

-or-

- Acquire 101.3 miles riverine habitat

c) **Mitigation Alternatives**

The proposed projects for river otter and waterfowl should benefit aquatic furbearers.

d) **Recommended Alternative**

~~It is recommended~~ the river otter project include an objective to identify mitigation opportunities for other aquatic furbearers.

e) **Mitigation Accounting**

Implementation of the proposed river otter and waterfowl projects shall be deemed sufficient mitigation for aquatic furbearer losses attributable to Libby Dam

f) **Benefits to Other Species**

None.

11. FURBEARERS (UPLAND SPECIES)

a) Introduction

Pine marten, lynx, and bobcat incurred low to moderate losses which were associated with the loss of 25,500 acres of year long habitat. Numbers of animals lost could not be determined. Previous mitigation projects provided benefits to upland furbearers, primarily bobcat, on 2,207 acres.

b) Mitigation Objective

-Increase the carrying capacity of northwestern Montana by numbers of pine marten, lynx, and bobcat equivalent to losses attributable to Libby Dam

-or-

- Acquire 23,293 acres of upland furbearer habitat

c) Mitigation Alternatives

It is probable benefits to pine marten, lynx and bobcat will accrue from projects to benefit big game species. As with the other carnivores, to be effective mitigation, habitat enhancement must occur over a large area.

d) Recommended Alternative

None.

e) Mitigation Accounting

The recommended projects for white-tailed deer, mule deer, and bighorn sheep shall be deemed sufficient mitigation for pine marten, lynx, and bobcat losses attributable to Libby Dam.

f) Benefit to Other Species

None.

12. MOUNTAIN GROUSE

a) Introduction

Ruffed grouse, blue grouse, and spruce grouse incurred high, moderate, and low losses, respectively, associated with the loss of 19,169 acres of year long habitat. Numbers of birds lost could not be determined. Previous mitigation projects provided mountain grouse benefits on 2,207 acres.

b) Mitigation Objective

-Increase the carrying capacity of northwestern Montana by numbers of ruffed grouse, blue grouse, and spruce grouse equivalent to losses attributable to Libby Dam

-or-

- Acquire 16,962 acres of mountain grouse habitat

c) Mitigation Alternatives

It is probable that benefits to mountain grouse will accrue from projects to benefit big game species.

d) Recommended Alternative

NOM.

e) Mitigation Accounting

The recommended projects for white-tailed deer, mule deer, and bighorn sheep shall be deemed sufficient mitigation for ruffed grouse, blue grouse, and spruce grouse losses attributable to Libby mm.

f) Benefits to Other Species

None.

13. COLUMBIAN SHARP-TAILED GROUSE

a) Introduction

Columbian sharp-tailed grouse incurred low losses associated with the loss of 3,917 acres of year long habitat. Numbers of birds lost could not be determined. Previous mitigation projects provided sharp-tailed grouse benefits on 801 acres.

The current range of Columbian sharp-tailed grouse in northwest Montana is fragmented due to limited habitat availability and habitat losses associated with agriculture and subdivision. The Tobacco Valley in the vicinity of Lake Koocanusa still supports a remnant Columbia Sharp-tail population. This **population, however,** is threatened by further habitat losses and **alternations. Only** a portion of the sharp-tail's habitat has been protected by previous land acquisitions.

b) Mitigation Objective

- Increase the carrying capacity of northwestern Montana by numbers of Columbian sharp-tailed grouse equivalent to losses attributable to Libby Dam

-or-

- Acquire and enhance 3,116 acres of Columbian sharp-tailed grouse habitat.

c) Mitigation Alternatives

Although the loss estimate for sharptails was low, it is of concern because only a remnant population remains in northwestern Montana. That population occupies a restricted habitat in the Tobacco River Valley and sub-division of those lands is imminent.

d) Recommended Alternatives

It is recommended that both habitat protection (on 3,116 acres) and enhancement take place in the Tobacco Valley. Enhancement would include controlled grazing, prescription burning and desirable shrub planting. Protection could occur through cooperative management agreements on state lands and conservation easements for private lands.

e) Mitigation Accounting

Acquisition and enhancement on 3,116 acres shall be deemed sufficient mitigation for Columbian sharp-tailed grouse losses attributable to Libby Dam.

f) Benefits to Other Species

Acquisition would benefit nongame species indigenous to grassland habitat. Depending on location, acquisition also could provide spring range for deer and elk.

14. WATERFOWL

a) Introduction

Waterfowl incurred low to high losses, depending on individual species, associated with the loss of 13,307 acres of habitat. Numbers of birds lost could not be determined. Previous mitigation projects provided waterfowl benefits on 66 acres.

b) Mitigation Objective

-Increase the carrying capacity of northwestern Montana by numbers of waterfowl equivalent to losses attributable to Libby Dam

-or-

Acquire 4,326 acres of prime wetland habitat

c) Mitigation Alternatives

The best opportunities for mitigating waterfowl losses, attributable to Libby Dam and also making substantial contributions to the breeding and migrating waterfowl population in northwestern Montana, would be to acquire prime wetlands in the upper Flathead valley that complement existing U.S. Fish and Wildlife Service projects. Generally, wetlands in the Flathead Valley are more productive for waterfowl than those impounded by Libby Dam. Thus, the mitigation objective could be accomplished on fewer acres than those impacted by the Libby Dam project. This approach provides the opportunity to implement a project that simultaneously accomplishes waterfowl objectives for Libby Dam and Hungry Horse Dam.

d) Recommended Alternative

It is recommended 4,326 acres of prime wetlands be acquired, by conservation easement or fee-title. Potential project areas are identified in Table 5, however, this list is not all inclusive.

Acquisition and implementation of appropriate habitat enhancement shall be coordinated with the Fish and Wildlife Service and the Montana Department of Fish, Wildlife and Parks.

e) Mitigation Accounting

Waterfowl habitats, inundated by Lake Koocanusa, were rated according to an estimate of potential value to waterfowl and assigned to one of three categories (low, medium, or high). Weighting factors of 2, 5, or 10 were assigned respectively to each of those categories. The acreage of each habitat mapping unit (Yde and Olsen 1984) was multiplied by the corresponding weighting

Table 5. Potential locations and approximate acreages of waterfowl mitigation projects in Flathead Valley.

Wetland Name/Area	Description	Township	Range	Section(s)	Approximate Acreages
Potholes northwest of Kalispell	Grop of potholes	29N	22W	14,15,22	472
Morning Slough	Potholes at base of Swan Range	29N 30N	20W 20W	3 34	120
Wetlands West and Northwest of Kalispell	Small wetland Drained pothole	29N 28N	22W 22W	33 3, 4	35 75
McWanneger Slough	Oxbow Lake	29N 28N 28N	20W 20W 21W	31,32 6 1	420
Fairview Marsh	barge pothole	29N	20W	28,29,32,33	520
Old Steel Bridge	Remnant Marsh	28N	21W	11	125
Eagan Slough	Oxbow Lake	28N	20W	17-20,30	800
Church Slough	Oxbow Lake	28N	20W 21W	31 36	400
Robocker Ponds	Oxbow Ponds	28N	20W	29	120
Rodgeson Pond	Pothole	28N 27N	20W 20W	33 4	165
Patrick Creek Slough	Creek, Marsh, Slough	27N	21W	3,10,11,15	330
Unknown Slough	Remnant Slough	27N	21,20W	1, 6	140
Cooper's Slough	Old Slough	27N	21W	13,14	300
Bethel potholes	Potholes	27N	20W 21W	6, 7,18 12	240 60
Unknown Slough	Old Slough	27N	20W	5, 7, 8,18	360
Cat Bay Wetland (West Side Flathead Lake)	barge Narab	23N	20W	3,10	200
Sandsmark SPA Additions (Nindepiee National Wildlife Refuge)	Potholes	19N	20W	16	160
Flathead WPA Expansion	Wetlands	27N	20W	19,20,21,28,30	2,000
Flathead WPA Special Projects	Enhancement	27N	20W	19,20,21,28,30	100
Batavia WPA Expansion	Wetlands/bay meadows	28N	22W	16,20,21,29	500
Batavia WPA Special Projects	Enhancement	28N	22W	16,20,21,29	200
Smith Lake Expansion	Wetlands/bay meadows	27N	22W	4,8,9,17,18	1,490
Smith Lake Special Projects	Enhancement	27N	22W	4,8,9,17,18	1,000
Swan River Expansion	Wetlands	25N	18W	22,23,26,2734,35	2,000
Swan River Special Projects	Enhancement	25N	18W	22,23,26,2734,35	500
TOTAL					12,260

factor to determine a "point" value for each habitat mapping unit. "Point" values for all amounts were summed and the 13,307 acres thus was converted to an objective of 43,919 "points".

Previous mitigation included 43 acres of habitat enhancement that was rated as high value (430 points) and erection of nest structures on 114 acres that was rated as low value (228 points). The mitigation objective therefore became 43,261 "points" (43,919-658=43,261). Assuming that habitats acquired for waterfowl mitigation would be high quality (weight value of 10), that objective represents 4,326 acres of prime wetland habitat.

Credits would be applied on an acre for acre basis for lands acquired by conservation easement or fee-title acquisition. Credits for enhancement would be applied on a 3 to 1 basis using the enhancement objective described in Methods Section (II.B.).

f) Benefits to Other Species

Wetland acquisition should benefit beaver, muskrat, mink, bald eagle, osprey, and a variety of nongame species dependent on aquatic and riparian habitats. Depending on location, wetland acquisitions also may benefit white-tailed deer, river otter, and ruffed grouse.

15. BALD EAGLE

a) Introduction

Bald eagles incurred moderate losses, associated with an estimated reduction of 18 birds in the wintering population. Previous mitigation projects provided no benefits for bald eagles.

b) Mitigation Objective

-Maintain and enhance bald eagle nesting habitat associated with Lake Koocanusa.

c) Mitigation Alternatives

The northern bald eagle is an endangered species within the United States (Endangered Species Act, 1973). It is presumed that effective mitigation for big game species also will enhance bald eagle winter habitat due to increases in carrion. Mitigation measures to enhance the fishery in Lake Koocanusa also should benefit bald eagles, but that food source would not be available when the reservoir is frozen. Eagles also should benefit from mitigation measures for aquatic furbearers. Mitigation for winter losses is desirable, but measures to enhance nesting habitat would be more compatible with objectives to attain a recovered bald eagle population. Bald eagles do not readily use artificial nest structures, but ospreys do (Olendorff et al. 1980). Thus, it would be appropriate to protect existing nest trees, tall snags, and live trees within several hundred yards of Lake Koocanusa, and to implement timber management prescriptions that would ensure the continued presence and broad distribution of suitable nest and perch trees on the reservoir margin.

d) Recommended Alternative

It is recommended that a project be developed to delineate occupied nesting territories and nest trees, identify potential nesting territories, and develop appropriate silvicultural prescriptions to maintain and enhance bald eagle nesting habitat on Lake Koocanusa. This project shall be coordinated with the Kootenai National Forest, US. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and the Montana Department of Fish, Wildlife and Parks and Montana Bald Eagle Working Group.

e) Mitigation Accounting

Implementation of the recommended project shall be deemed sufficient mitigation for bald eagle losses attributable to Libby mm.

f) Benefits to Other Species

A project to maintain and enhance bald eagles nesting habitat **also should** benefit osprey and a variety of old-growth dependent species.

16. OSPREY

Impoundment of Lake Koocanusa provided minor benefits to osprey, and it is probable that osprey also will benefit from projects to benefit other species. There is no mitigation objective for osprey and no projects are recommended.

C. MITIGATION PLAN

1. RANKING OF RECOMMENDED PROJECTS FOR IMPLEMENTATION

To set guidelines for project prioritization and initiation, projects were ranked using an estimated percent mitigation credit which each species (group) should receive from each recommended project (Table 6). These estimates were based on the acreages recommended for treatment and/or enhancement and on acreages already acquired for mitigation (previous mitigation). The values in Table 6 were then multiplied by the qualitative impact level given to each species (group) during Phase I (Mundinger and Yde 1984). Highly impacted species were weighted as 3, moderately impacted species were weighed as 2 and low impacted species as 1. Averages of the qualitative impacts for species were used for **species groups**. Resulting products for each project were summed **and the percent** contribution of each project to the overall mitigation effort calculated (Table 7). An illustration of the percent contribution of each project to overall mitigation is shown in Figure 2.

Projects were then ranked in the basis of their contribution to overall mitigation. An exception was made for the Columbian Sharp-tailed Grouse project which was ranked in the second group rather than third because the remaining habitat for this species is threatened. If action is not taken soon, the existing opportunities for sharp-tail habitat acquisition or protection will be gone. Time-frames for project initiation were recommended for each project as follows:

Priority	Project	Initiation Time-Frame (years)
1.1	White-tailed deer	0-3
1.2	Bighorn Sheep	0-3
1.3	River Otter/Aquatic Furbearer	0-3
2.1	Mule Deer	0-5
2.2	Columbia Sharp-tailed Grouse	0-5
2.3	Waterfowl	0-5
3.1	Bald Eagle	0-10
3.2	Grizzly Bear	0-10

Table 6. Mitigation accounting, expressed as a percent of mitigation objectives, for projects included in the proposed mitigation plan.

Species	Previous Mitigation	White-tailed Deer Project	Mule Deer Project	Bighorn Sheep Project	Grizzly Bear Project	River Otter Project	Sharp-tailed Grouse Project
White-tailed deer	8	92					
Mule Deer	18		36	31			
Bighorn Sheep	7			93			
Moose	7	93					
Black Bear	7	39	16	14	16	4	
Grizzly Bear	2				98		
Mountain Lion	11	50	19	16			
River Otter						100	
Aquatic Furbearers	1					66	33
Upland Furbearers	9	52	21	18			
Montana Grouse	12	50	20	18			
Columbian Sharp-tailed Grouse	20						80
Waterfowl	1						
Bald Eagle							

Table 7. Derivation of the percent contribution of each project to the overall Libby mitigation project.

Species	Qualitative Loss Value	Previous Mitigation	White-tailed Deer Project	Mule Deer Project	Bighorn Sheep Project	Grizzly Bear Project	River Otter Project	Sharp-tailed Grouse Project	Waterfowl Project	Eagle Project	Total
White-tailed deer	3.00	0.24	2.76								3.00
Mule Deer	3.00	0.54		1.08	0.93						2.55
Bighorn Sheep	3.00	0.21			2.79						3.00
Moose	1.00	0.07	0.93								1.00
Black Bear	3.00	0.21	1.17	0.48	0.42	0.48	0.12				2.88
Grizzly Bear	1.50	0.03				1.47					1.50
Mountain Lion	2.00	0.22	1.0	0.38	0.32						1.92
River Otter	2.00						2.0				2.00
Aquatic Furbearers	2.25	0.02					1.48		0.75		2.25
Upland Furbearers	1.70	0.15	0.88	0.31							1.70
Montana Grouse	2.00	0.20	1.0	0.40	0.40						2.00
Columbian Sharp-tailed Grouse	1.0	0.20						0.80			1.00
Waterfowl	1.5	0.02							1.48		1.50
Bald Eagle	2.0									2.0	2.00
TOTAL		2.11	7.74	2.7	5.17	1.95	3.60	0.80	2.23	2.0	28.30
% Mitigation Plan		7	27	9	18	7	13	3	8	7	100

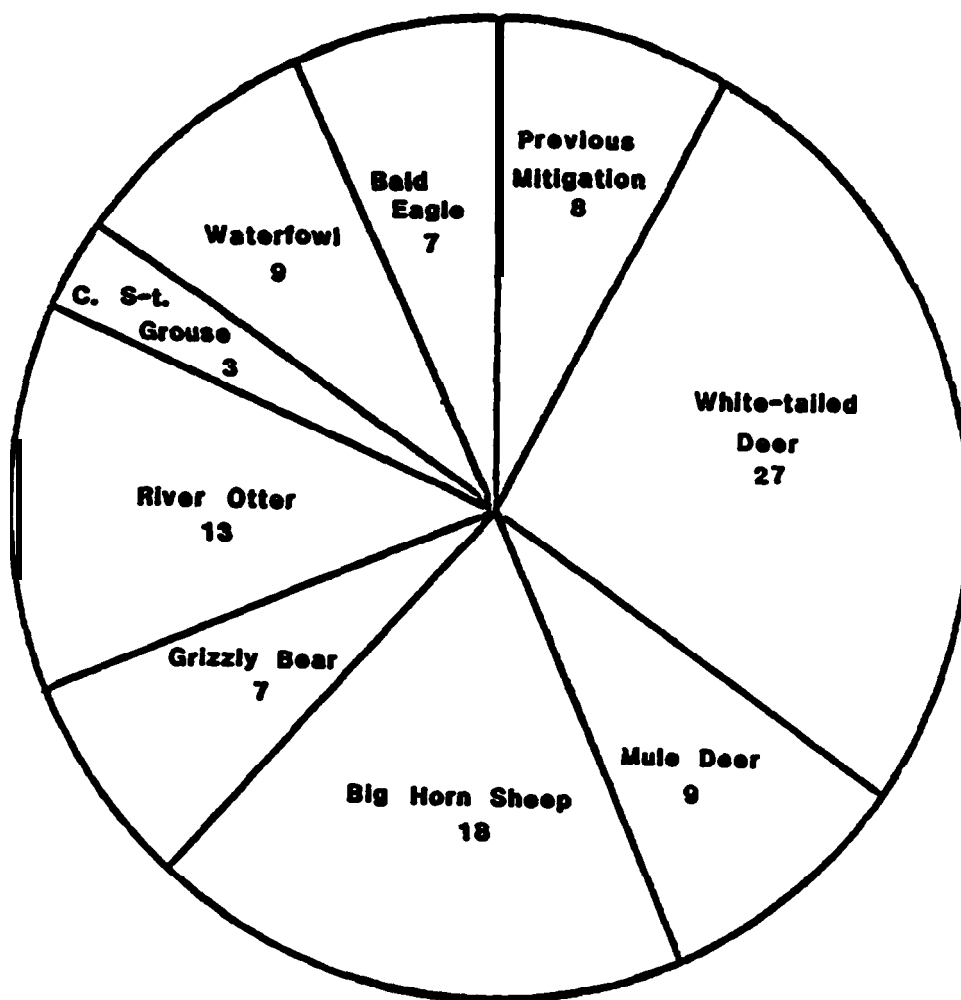


Fig. 2. Mitigation accounting, expressed as a percent of the overall mitigation objective, for projects included in the proposed mitigation plan.

2. ESTIMATED COSTS

Costs for each recommended project have been estimated and delineated using 2 formats. In Table 8, costs per project are presented by 4 phases or categories: advance design, implementation, maintenance, and monitoring. The advance design stage entails project design, plan development, and interagency coordination. Implementation refers to the initial ~~on-the-ground~~ habitat treatments, acquisitions, or research/management projects. Maintenance applies to those projects requiring repeated habitat treatments (following the initial ones) over the life of the project. Finally, monitoring encompasses the periodic measurements or assessments of project success made after implementation and/or maintenance procedures are completed. Justifications for project costs are given in Appendix C.

In Table 9, estimated costs for each project on an annual basis are presented. These estimates follow the recommended staggered implementation schedules and include the appropriate costs for that year. Costs for the first 10 to 25 years primarily include the advance design and implementation costs. costs delineated after year 25 refer to maintenance and monitoring. For more information, refer to Appendix C.

3. Comparison of Estimated Project Costs to Alternatives

The recommended mitigation projects were selected by using the criteria described in the Methods Section. These criteria emphasized selecting enhancement projects in preference to fee-title acquisition projects. One principal reason for this preference was the high cost associated with land acquisition. As shown in Table 10, the estimated costs of fee-title acquisition for each mitigation project are significantly greater than the estimated costs for recommended projects described in this report. To mitigate wildlife impacts through habitat acquisition, the expected costs could be 2 to 3 times the costs using other alternatives.

Table 8. Estimated costs (1984 dollars), by total and category, for recommended mitigation projects for the Libby hydroelectric project, Montana.

Project	Advanced		Maintenance	Monitoring	Total Estimated Cost
	Design	Implementation			
mite-tailed Deer	400,000	1,875,000	5,625,000	475,000	8,375,000
Mule Deer	200,000	875,000	2,625,000	475,000	4,275,000
Bighorn Sheep	300,000	843,750	1,631,250	485,808	3,260,000
Grizzly Bear	240,000	250,000			490,000
River otter & Aquatic Furbearers	315,000	250,000			565,000
Columbian Sharp-tailed Grouse	58,000 50,000	2,000,000 or 3,116,000*1			2,050,000 or 3,166,060
Waterfowl		2,703,750 or 10,815,000*2			2,703,750 or 10,815,000
Bald Eagle	240,000				240,000
					21,858,750 to 31,086,060

*1 Low estimate assume 100% acquired by conservation easement at \$624/ac; high estimate assumes 100% conservation easement at \$1,00/ac

*2 Low estimate assumes 100% acquired by conservation easement at \$625/ac; high estimate assumes 100% fee-title acquisition at \$2,500/ac

Table 9. Estimated annual budget to implement the Libby mitigation plan.

Year	White-tailed Deer	Mule Deer	Bighorn Sheep	Grizzly Bear	Sharp-tailed Grouse	Waterfowl	Bald Eagle	Otter	Total
1	80,000	50,000	125,000			30,000			285,000
2	80,000	100,000	125,000			30,000			335,000
3	160,000	100,000	125,000		50,000	30,000			465,000
4	160,000	100,000	225,000		300,000	30,000			815,000
5	160,000	100,000	32,500		700,000	30,000			1,022,500
6	85,000	41,500	32,500	80,000	500,000	30,000	50,000	80,000	899,000
7	85,000	41,500	32,500	80,000	500,000	30,000	50,000	80,000	899,000
8	85,000	41,500	32,500	80,000		30,000	70,000	80,000	419,000
9	85,000	41,500	32,500	62,500		30,000	70,000	62,500	384,000
10	85,000	41,500	32,500	62,500		30,000		62,500	394,500
11	85,000	41,500	32,500	62,500		30,000		62,500	394,000
12-25	85,000	41,500	32,500	62,500		30,000		62,500	314,000
25-100	85,000	40,000	32,500			30,000			187,500

Table 10. Comparison of estimated costs to implement each Libby mitigation project as recommended or as a fee-title acquisition alternative

Project	Recommended Cost	Acres	Fee-Title Cost (\$)/Acre	Acquisition Total Cost (\$)
White-tailed Deer	8,375,000	11,070	1,500	16,605,000
Mule Deer	4,275,000	5,897^{*1}	1,500	8,845,500
Bighorn Sheep	3,260,000	4,039	1,500	6,058,500
Grizzly Bear	490,000	--	---	490,000[*]
River Otter	565,000	3,636^{*2}	2,000	7,293,600
Col. Sharp-tailed Grouse	2,050,000	3,116	1,000	3,116,000
Waterfowl	2,703,750	4,326	2,500	10,815,000
TOTAL	21,958,750			53,223,600
^{*1} This cost estimate accounts for overlap with Bighorn Sheep project ^{*2} Used 101.3 river miles x 300 foot buffer to get acres of river mile (36 acres per river mile)				

IV. SUMMARY

This report describes the proposed mitigation plan for wildlife losses attributable to the construction of the Libby hydroelectric project. The report (Phase II) follows and relates to the specific target wildlife species loss estimates made in a previous report, Phase I (Yde and Olsen 1984).

In this report, mitigation objectives and alternatives, the recommended mitigation projects, and the crediting system for each project are described by each target species (or group).

Criteria were used to evaluate mitigation alternatives and to select a recommended project. These criteria included: 1) the number and kinds of species (or species groups) benefitted by an alternative; 2) consistency with the Northwest Power Act of 1980, the Northwest Power Planning Councils' Columbia River Fish and Wildlife Program and draft criteria for land acquisition; 3) consistency with the MDFWP mitigation guidelines (Appendix A); and 4) the results of interagency coordination.

For all target species, the overall mitigation objective was to replace the losses, either the numbers of animals or acres of key habitats lost. Mitigation objectives for each species (group) were established based on the loss estimates but tailored to the recommended projects. Depending on the nature of the recommended project, a mitigation accounting or crediting system was then developed.

The report describes previous mitigation that has already taken place for wildlife; it also describes 8 recommended mitigation projects designed to complete total wildlife mitigation. The 8 projects are:

- 1) **White-tailed Deer winter range management**
- 2) **Mule Deer winter range enhancement**
- 3) **Bighorn Sheep winter/spring range enhancement**
- 4) **Grizzly Bear management**
- 5) **River Otter and Aquatic Furbearer management**
- 6) **Columbian Sharp-tailed Grouse habitat acquisition**
- 7) **Waterfowl (wetland) habitat acquisition**
- 8) **Bald Eagle breeding habitat management**

Each of these 8 projects was ~~designed~~ to meet the mitigation objective for that particular species or species group as well as other target species wherever possible. Therefore, when all projects are combined, the mitigation plan will mitigate losses for all target species identified during Phase I (Yde and Olsen, 1984).

To facilitate implementation, the recommended projects were ranked according to the contribution that each project will make to the overall mitigation goal (Tables 6 and 70).

Implementation schedules were then assigned to each project. The resulting project priorities, implementation schedules and project descriptions are presented in Table 11. An illustration of the percent contribution of each recommended project to the whole mitigation plan is presented in Figure 2.

Costs were estimated for each recommended project and presented by category (e.g. advance design, implementation, maintenance and monitoring) and for the life of the project (Tables 8 and 9). For projects recommending acquisition, either by conservation easement or fee-title, a cost range estimates were presented. A summary of the total estimated costs (or ranges) for each project is given below.

Project	Total Estimated Cost (1984 dollars)
White-tailed Deer	8,375,000
Mule Deer	4,275,000
Bighorn Sheep	3,260,000
Grizzly Bear	490,000
River Otter/ Aquatic Furbearers	565,000
Columbian Sharp-tailed Grouse	2,050,000 to 3,166,060
Waterfowl	2,703,750 to 10,815,060
Bald Eagle	240,000
TOTAL	<hr/> 21,958,750 to 31,136,120

Table 11. Summary of recommended wildlife mitigation projects, priorities, schedules, locations and cooperators for the Libby hydroelectric project.

Project	Priority	Implementation Time-Frame (years)	Maintenance Schedule	Locations	Cooperators
Maintain and enhance 32,615 acres of white-tailed deer winter range.	1.1	0-3	Periodic for the life of the project	Project area selected according to priorities in Table 4	Private timber companies, Montana Dept. of State Lands U.S. Forest Service
Enhance 11,600 acres of bighorn sheep winter/spring range adjacent to Lake Kootenusa	1.2	0-3	Periodic for the life of the project	Kootenai National Forest Lands	Kootenai National Forest
Enhance 13,400 acres of mule deer winter/spring range adjacent to Lake Kootenusa	1.3	0-3	Periodic for the life of the project	Kootenai National Forest Lands	Kootenai National Forest
Acquire, by conservation easement or fee-title, 3,116 acres of Columbian Sharp-tailed grouse habitat.	2.1	0-5	No maintenance	Tobacco River Valley	Private landowners
Identify mitigation opportunities for river otter and other aquatic furbearers	2.2	0-5	Indefinite	Northwest Montana	Montana Dept. Fish, Wildlife and Parks
Acquire, by conservation easement or fee-title, wetland habitats	2.3	0-5	No maintenance	Acquisitions selected in Flathead Valley according to potential projects displayed in Table 5.	U.S. Fish and Wildlife Service
Identify mitigation opportunities for grizzly bear	3.1	0-10	Indefinite	Cabinet Yaak/Northern Continental Divide Ecosystem	U.S. Fish and Wildlife Service
Maintain and enhance bald eagle nesting and habitat adjacent to Lake Kootenusa	3.2	0-10	Periodic for the life of the project	Lake Kootenusa	Kootenai National Forest

- V. LITERATURE CITED

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- _____. 1973. Evaluation of big game habitat improvement, July 1, 1971-June 30, 1972. Montana Dept. Fish and Game, in cooperation with U.S. Army Corps of Engineers, Contract No. **DACW67-71-C-0002**. 43pp.
- _____, and K. G. Knoche. 1974. Evaluation of big game ~~habitat improvement~~, July 1, 1972-June 30, 1973. Montana Dept. Fish and Game, Annual Rept., in cooperation with the U.S. Army corps of Engineers, Contract No. **DACW67-71-C-0002**. 45pp.
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- Yde, C. A. and A. Olsen. 1984. Wildlife impact assessment and summary of previous mitigation related to hydroelectric projects in Montana; Volume- - Libby Dam Project. Montana Dept. Fish, Wildlife and parks rept. 91 pp & appendices.

APPENDIX A

May 31, 1983

MONTANA DEPARTMENT OF FISH, WILDLIFE, AND PARKS

MITIGATION GUIDELINES

When mitigation as provided by law is proposed for development projects, the Montana Department of Fish, Wildlife, and Parks shall request funding from the developer, or appropriate agency, to conduct those studies necessary to determine impacts of the development on fish and wildlife and their habitat and to develop a project specific mitigation plan.

WILDLIFE SECTION

The principle objective of the mitigation plan shall be to mitigate within the project area impacts to wildlife and to compensate for animal losses attributable to the development project. The plan shall identify measures to maintain populations of affected species. The plan shall prescribe appropriate measures to document the implementation of the mitigation package, to monitor wildlife response to those measures, and to document the sufficiency of mitigation.

The Montana Department of **Fish, Wildlife,** and Parks shall request funding from the developer, or the appropriate agency, to implement, monitor and document the mitigation measures prescribed in the mitigation plan.

Selection of mitigation measures for terrestrial species shall be determined by the following criteria:

- A. The mitigation objective shall be to replace, on an animal for animal basis, animal losses attributable to the development project and to ensure the replacement of lost animal production into the future. This objective may be modified according to this priority:
 - 1. To replace, on an animal for animal basis, animal losses specifically attributable to the development project.
 - 2. To replace, on an animal for animal basis, some of the animal losses and an appropriate equivalent of animals of other species.
 - 3. To replace, on an animal for animal basis, an appropriate equivalent of other species.
- B. Mitigation measures:
 - 1. The highest priority shall be assigned to the development and implementation of measures to enhance wildlife habitat on land owned by other agencies, corporations, or individuals without the Department acquiring management authority to those lands.

Implementation of enhancement measures shall be dependent upon cooperative agreements with the appropriate land management agencies and a land allocation compatible with mitigation objectives. The Department shall request funding for implementation of those measures, including operation and maintenance for

the life of the development project, and, when appropriate research end development of enhancement measures.

2. If the Department cannot negotiate agreements to implement enhancement measures on lands in other ownership within a reasonable time, then the Department shall attempt to acquire management authority over lands identified in the mitigation plan. Acquisition of management authority by conservation easement, when applicable, shall have priority over acquisition by fee title from willing sellers. Lands to be acquired shall be determined by priorities established by this policy, while procedure for acquisition shall be consistent with principles outlined in the Department's statewide habitat acquisition policy. The Department shall develop a management plan for acquired lands. The Department shall request the developer, or the appropriate agency, to acquire the lands and to provide funding for development of the management plan, research and development appropriate to the management of those lands, and ongoing operation and maintenance of those lands.
 3. On new projects the Department shall request that mitigation lands be acquired at the same time as other project lands and be included in basic project costs.
- C. The location of mitigation projects shall be consistent with the mitigation objectives, and be determined according to the following priority:
1. Immediate vicinity of the development project or within the annual range of the species affected.
 2. Within the county (or within a 50-mile radius) of the development project.
 3. Within the corresponding Department of Fish, Wildlife, and Parks administrative region.
 4. Within Montana.
- D. Mitigation measures shall feature those species identified in Section A-1, 2 or 3, consistent with the mitigation objective. Those species shall have priority at all projects within location priorities Section C-1. 2. and 3. Thereafter, features species shall be determined by SCORP.

Decisions regarding acceptance or rejection of proposed mitigation recommendations shall be made with full public knowledge, input, and review.

Approved by: _____

Date: _____

APPENDIX B

Appendix B Big game habitat manipulations and mitigation credit
for the Libby Dam project.

Drainage	Treatment	Acres Treated	Mitigation Credit
Young Creek	Slash/Burn	100	12.5
Young Creek	Thinning and Seed	4 %	
Tooley Lake	Thinning	78	
Dodge Creek	Scarification & Seed	170 ^a	24.3
Simons Draw	Logging & Broadcast Burn	770 ^b	192.5
Simon Draw	Broadcast Burn	188	
Boulder Creek	Broadcast Burn	451	
Big Creek	Logging & Broadcast Burn	670	167.5
Big Creek	Broadcast Burn	320 ^c	
Little N. Fork	Broadcast Burn	42	
Eureka Y.	Thinning	50	
Phills Lake	Thinning	26	
Camp 32	Broadcast Burn	474	
Sutton Creek	Broadcast Burn	250	
McQuire Creek	Logging & Broadcast Burn	816 ^d	204
Rocky Gorge	Broadcast Burn	127	
Allen Gulch	Broadcast Burn	210	
Ten Mile Creek	Broadcast Burn	439	
Peach Gulch	Broadcast Burn	90	
Ziegler Face	Broadcast Burn	490	
Five Mile Creek	Broadcast Burn	50	
Canyon Creek	Broadcast Burn	90	
Canyon Creek	Thinning	200	
Total Big Game		6,596 ^e	600.8
Tooley Lake	Gamebird Habitat	20	20
Arnolds Pond	Gamebird Habitat	10	10
Dodge Creek	Gamebird Habitat	13	13
Orthorplake	Nest Boxes	100	20
Phills Lake	Nest Boxes	14	2.8
Total Waterfowl		157	65.8

a This acreage was funded by U.S. Forest Service dollars after 1974.

b Approximately 188 acres of this treatment was funded by the U.S. Forest Service after 1974 equaling 37.6 acres of credit.

c Approximately 320 acres of this treatment was funded by the U.S. Forest Service after 1974 equaling 64.0 acres of credit.

d Approximately 482 acres of this treatment was funded by the U.S. Forest Service after 1974 equaling 120.5 acres of credit.

e The treatments funded by U.S. Forest Service dollars were included where projects were closely related to pre-1974 mitigation projects.

APPENDIX C

APPENDIX C. Derivation of estimated cost projections (1984 dollars) for advance design, implementation, maintenance, and monitoring requirements for 8 wildlife mitigation projects, Libby hydroelectric project, Montana.

C.1 White-tailed Deer Project
(To enhance/manage winter reange on 32,615 acres)

Advam\nceDesign: **Estimated Costs**

5 years to undertake design, planning, coordination, animal and vegetation monitoring.....	400,000
--	---------

Implementation:

Vegetatoin treatments, payments for revenue losses at \$25/acre on 15,000 ac at rate of 600 ac/year Over first 25 years. .	1,875,000
--	-----------

Maintenance:

Repeated vegetation treatments or payments every 25 years at rate of 600 ac/year for next 75 years	5,625,000
--	-----------

Monitoring:

Fbr 95 years at \$5,000/year	<u>475,000</u>
TOTAL	8,375,000

C.2 Mule Deer Project
(to enhance/manage winter range on 13,400 acres)

Advance Design:	<u>Estimated Cost \$</u>
3 to 5 years to design, plan and coordinate project; vegetatin and animal monitoing.....	300,000
Implementation:	
Repeated treatments on 7,000 ac at \$125/ac a for 25 years (280 ac/year).	875,000
Maintenance:	
Repeated treatments on 7,000 ac at \$125/ac every 25 years (280ac/year) for 3 rotations	2,625,000
Monitoring:	
For 95 years at \$\$,000/year	475,000
TOTAL.....	4,275,000

^a Represents an average cost for all treatments including such activities as broadcast burning, slashing, mechanical equipment clearing, planting etc. over a wide variety of seasons and conditions.

C.3 Big Horn Sheep Project
 (To enhance winter/spring range on 11,600 ac)

Advance Design:	<u>Estimated Cost \$</u>
3 years to desing, plan and coodinate project; vegetatoin and animal monitoring	300,000
Implementation:	
To treat 4,350 ac at \$125/ac ^a over 25 years (174 ac/year)	543,750
Construction of travel corridors	100,000
Other treatments (USFS).	200,000
Maintenance:	
Repeated treatments on 4,350 ac at \$125/ac x 174 ac x 5 years.....	1,631,250
Monitoring:	
Fbr 97 years at \$5,000/year.	<u>485,000</u>
TOTAL	3,260,000

^a Represents an average cost for all treatments including such activities as broadcast burning, slashing, clearing with mechanical equipment, planting etc. over a variety of seasons and conditions.

C.4 Grizzly Bear (Improved management)

Advance Design:	<u>Estimated Cost \$</u>
Investigations, recommendations, coordination for 3 years at \$80,000/year.. .	240,000
Implementation:	
Application of recommendation	250,000
Maintenance:	
None.	0 ^a
Monitoring:	
N o n e	<u>0^a</u>
TOTAL	490,000

^a Costs and responsibilities to be assumed by the Montana Department of Fish, Wildlife and Parks or other entities.

C5 River Otter/Aquatic Furbearers
(Improved population and habitat management)

Advance Design:

Estimated Cost

Investigations, recommendations,
coordination for 3 years at \$105,000/year . 315,000

Implementation:

Application of recommendations..... 250,000

Maintenance:

None 0^a

Monitoring:

None 0^a

TOTAL 565,000

^a costs and responsibilities to be assumed by Montana Department
of Fish, Wildlife and Parks or other entities.

C.6 Columbian Sharp-tailed Grouse
(Acquisition of 3,116 acres of occupies sharp-tailed
grouse habitat in Tobacco River Valley)

Advance Design: **Estimated Cost \$**

Habitat inventory; indentification and
selection lands; landowner contacts,
negotiations, legal and consultant fees... 50,000

Implementation:

Acquire 3,116 ac of habitat at 1,000/ac . 3,116,000
or
Acquire 3,116 ac of habitat via
conservation easement at \$642/ac 2,000,000

Maintenance:

None 0^a

Monitoring:

None 0^a

TOTAL 2,050,000
to
3,166,000

^a Costs and responsibilities to be assumed by Montana Department
of Fish, Wildlife and Parks.

C.7 Waterfowl (Acquisition/enhancement of 4,326 acres of prime wetlands-Flathead Valley)

Advance Design:	<u>Estimated Cost \$</u>
None	0 ^a
Implementation:	
Acquisition of 4,326 acres of prime wetland at \$2,500/ac	10,815,000
or	
Acquisition of 4,326 acres of prime wetland at \$625/ac	2,703,750
Maintenance:	
None	0 ^b
Monitoring:	
None	0 ^b
TOTAL	2,703,750 to 10,815,000

^a Costs and responsibilities to be assumed by U.S. Fish and Wildlife Service in cooperation with Montana Department of Fish, Wildlife and Parks.

^b Costs and responsibilities to be assumed by U.S. Fish and Wildlife Service or other entities.

C 8 Bald Eagle/Osprey
(Management of breeding habitat on Lake Kootenai)

Advance Design:	<u>Estimated Cost \$</u>
Habitat use investigations, recommendations, coordination for 3 years at \$80,000/year.	100,000
Implementation:	
Development of site-specific management recommendations	140,000
Maintenance:	
None	0 ^a
Monitoring:	
None	0 ^a
TOTAL	240,000

^a Responsibilities to be assumed by U.S. Forest Service in cooperation with Montana Department of Fish, Wildlife and Parks AND U.S. Fish and Wildlife Service.

-

APPENDIX D

Comments received during formal review.

LIST OF ADDRESSEES

Hungry Horse/Libby Mitigation Plans

RECEIVED
JAN 4 1995
F.S.
LIBRARY

Mr. James Flynn, Director
Attention: Mr. John Munding
Montana Department of Fish,
Wildlife, and Parks
1420 East Sixth Avenue
Helena, Montana 59620

Mr. John Wood, Field Supervisor
U.S. Fish and Wildlife Service
Ecological Services
Federal Building, Room 3035
316 North 26th Street
Billings, Montana 59101

Mr. Don Barschi, Coordinator
Fish and Wildlife Program
U.S. Forest Service
P.O. Box 7669
Missoula, Montana 59007

Mr. Martin Montgomery
Wildlife Coordinator
Northwest Power Planning Council
Statehouse
Boise, Idaho 83720

Hr. George Robertson, General
Attention: Mr. Ed Mains, NPD-PL-~~ER~~
U.S. Army Corps of Engineers
North Pacific Division
P.O. Box 2870
Portland, Oregon 97208

Hr. Alan Christensen
Kootenai National Forest
Route 3, Box 700
Libby, Montana 59923

Mr. William Lloyd, Regional Director
Attention: Hr. D. Woodworth
Bureau of Reclamation
550 West Fort Street
P.O. Box 043
Bose, Idaho 83724

Mr. Robert Hensler
Flathead National Forest
P.O. Box 147
Kalispell, Montana 59901

Mr. Thrumen H. Trosper, Chairman
Flathead Basin Commission
Rt 1, Box 43
Ronan, Montana 59864

Mr. Pam Barrow
Fish and Wildlife Coordinator
Pacific Northwest Utilities
Conference Committee
520 SW. Sixth Avenue, Suite 505
Portland, Oregon 97204

Hr. Joe Felsman, Chairman
Confederated Salish and Kootenai Tribes
of the Flathead Indian Reservation
P.O. Box 278
Pablo, Montana 59855

Ms. Amelia Trice, Chairwoman
Kootenai Tribal Council
P.O. Box 1002
Bonners Ferry, Idaho 83805

**Montana Department
of
Fish, Wildlife & Parks**

DEC 27 1984



Helena, Montana
December 17, 1984

Mr. Jim Meyer
Bonneville Power Administration
POB 3621
Portland, Oregon 97208

RECEIVED

JAN 4 1985
FBI

Dear Jim,


The Montana Department of Fish, Wildlife and Parks has completed the wildlife impact assessments and mitigation plan for the Libby hydroelectric project. The mitigation plan presents eight recommended wildlife projects. If implemented, these projects would accomplish sufficient mitigation for the losses of wildlife and wildlife habitats attributable to Libby Dam.

Our process was comprehensive and responsive to the Columbia Basin Fish and Wildlife program under the Northwest Power Act of 1980. Each selected project benefits several wildlife species. Generally, habitat enhancement will occur in close proximity to Libby Dam and on lands owned by other cooperating entities. Acquisitions were specified only when other alternatives were not feasible. Preparation of both the impact assessment and the mitigation plan was closely coordinated with the other responsible management agencies.

We believe that this plan is an innovative approach to wildlife mitigation. Most of the proposed projects are considerably more cost effective than acquisition alternatives. Yet, they should produce greater wildlife benefits to be maintained for the life of the project.

I support adoption of the mitigation plan for Libby hydroelectric projects. I also commit the Montana Department of Fish, Wildlife and Parks to fully cooperate with the implementation of this plan.

Sincerely,


James W. Flynn
Director

ftm

JAN 02 1985



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

Ecological Services
Federal Building, Room 3035
316 North 26th Street
Billings, Montana 59101-1396

RECEIVED
JAN 4 1985
E.P. & C. PERRY

IN REPLY REFER TO:

. ES

December 27, 1984

Mr. James R. Meyer
Wildlife Program Area Manager
Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208

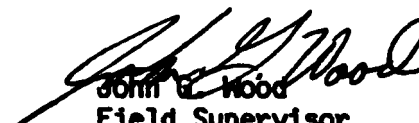
Dear Mr Meyer:

We have received the following documents from you for formal review: "Wildlife and Wildlife Habitat Mitigation Plan for Libby Hydroelectric Project" and "Wildlife and Wildlife Habitat Mitigation Plan for Hungry Horse Project." In addition, Messrs. Larry Lockard and Ray Washtak represented the Fish and Wildlife Service at a meeting concerning these reports on December 18, 1984, and also met on December 19, 1984, with Ms. Gael Bissell to discuss the reports.

The Fish and Wildlife Service (FWS) concurs with the reported findings of the Montana Department of Fish, Wildlife, and Parks (MDFWP) Full implementation of the subject plan should provide equitable mitigation and wildlife-related losses at the Libby and Hungry Horse facilities.

The FWS intends to actively cooperate with MDFWP to assist in implementation of these mitigation plans.

Sincerely,


John G. Wood
Field Supervisor
Ecological Services

cc: Director, Montana Department of Fish, Wildlife, and Parks,
Helena, MT
Forest Supervisor, Kootenai National Forest, Libby MT
Forest Supervisor, Flathead National Forest, Kalispell, MT
District Engineer, Corps of Engineers, Portland, OR
Regional Director, Bureau of Reclamation, Boise, ID
Regional Director, USFWS, Denver, CO (HR)
Larry Lockard, NMFS, Kalispell, MI

JAN 02 1985



United States
Department of
Agriculture

Forest
Service

Kootenai NF

RR 3, Box 700
Libby, MT 59923

Reply to: 2610

Date: Dec. 28, 1984

Bonneville Power Administration
PO Box 3621, PJS
Portland, Oregon 97208
ATTN: Jim Meyer

RECEIVED
JAN 4 1985
Bonneville Power Administration

Dear Jim;

Following are our comments on "Wildlife and Wildlife Habitat Mitigation Plan for Libby Hydroelectric Project, November 1984";

(1) Page 15, table 4: Suggest adding a column on far right which lists the percent of complete mitigation accomplished by each entry. For example, does item 1 (Fisher River) account for all or part of mitigation and what combinations of the proposals would achieve mitigation?

(2) Page 43, table 9: "Weight deer: should be "whitetail deer".

(3) Appendix 8. As you recall from our discussion in Kalispell, we are concerned about the dismissal of benefits provided by spring burns. Since no credit is given in appendix B for spring burns, inference suggests that spring burns are not valid proposals. We feel strongly that spring burns are valid and that their effects have been well documented. As I recall, we agreed that inclusion of strictly Forest Service burns in this table is confusing and should be deleted. For the remaining spring burns I would suggest a clear statement that spring burns done with mitigation money were not documented as improving range conditions but that spring burns are a valid technique. Without this clarity, there will be a potential challenge for all spring burn proposals in future mitigation.

(4) In all appendix c advance design costs, there is no consistency between apparent FTE costs and no clear explanation why not. Given the extent of money involved, I feel a much more well defined cost breakdown is needed in the advance design portion.

(5) Page C-6; the total cost for this project is stunning. This is particularly true when the qualitative loss is estimated as low and the species is basically a relict at this time. I feel that sharptail grouse are indicative of a very important habitat that was partially flooded and is further threatened in the Eureka area, but





I am not comfortable with labeling losses at the figure used strictly in terms of sharp-tailed grouse.

Generally, the document reads well. I am concerned at the overall cost and wonder how well that will set with administrators, but also recognize that total elimination of any habitat is costly. Please call if you have any questions.

Alan

Alan G. Christensen
Forest Wildlife Biologist

RECEIVED
JAN 4 1965
U.S. FOREST SERVICE



DEPARTMENT OF THE ARMY
NORTH PACIFIC DIVISION CORPS OF ENGINEERS
P.O. BOX 2870
PORTLAND, OREGON 97208-2870

JAN 17 1985

REPLY TO
ATTENTION OF:

January 14, 1985

Construction-Operations Division

Mr. James R. Meyer
Wildlife Program Area Manager
Bonneville Power Administration
P. O. Box 3621
Portland, Oregon 97288

Dear Mr. Meyer:

Below are our comments on the Wildlife and Wildlife Habitat Mitigation Plan for Libby Hydroelectric Project prepared by Montana Department of Fish, Wildlife and Parks. Other comments will be provided later this year during the public period established for Libby by the Northwest Power Planning Council.

The U. S. Army Corps of Engineers cannot endorse or **support wildlife** mitigation for Libby Project at an estimated cost of 21 to 31 million dollars. We feel that part of the reason for the high mitigation cost is the attempt to incorporate too many species into the mitigation concept. Many of the species identified do **not** appear in the original authorization.

The historical record presented in the mitigation plan for Libby appears to be accurate in what is stated. However, some of the information needs to be emphasized. Wildlife mitigation at Libby was authorized under Public Law 93-251 as a land acquisition action for up to 12,000 acres at a fixed cost not to exceed 2 million dollars. This mitigation strategy resulted in the acquisition of 2,444 acres and the total expenditure of the authorized funds. The land acquired for mitigation was transferred in fee title to Montana Department of Fish, Wildlife and Parks. The state assumed the operations and maintenance responsibility for those lands.

The animal species identified in the original supporting documentation for the congressional authorization to conduct wildlife mitigation measures at Libby were: White-tailed deer, mule deer, bighorn sheep, elk, and moose. In support of these big game species, but apart from the lands transferred in fee to Montana Department of Fish, Wildlife and Parks; the U. S. Army Corps of Engineers, through a Memorandum of Understanding with the U. S. Forest Service, funded the prescribed cutting and burning of about 7,000 additional acres. Financial support was provided Montana Department of Fish, Wildlife and Parks by the Corps to monitor the results of the prescribed burns.

The existing information appears to indicate a need for intensive management on sustained **basis for both the lands transferred in fee to** Montana and in management responsibility on the U.W. Forest Service lands. We recommend, for the five species identified in the original mitigation action, that the Bonneville Power Administration; Montana Department of Fish, Wildlife and Parks; the U.W. Forest Service, and the Corps establish a schedule and attempt to develop a plan that will support viable populations of white-tailed deer, mule deer, bighorn sheep, and moose over the life of the project. The source of funding and the use of existing or new agreements should be discussed and incorporated into that plan.

We do not believe the other 23 species identified in the Montana plan for Libby were ever selected as mitigation targets in the original documentation. We recommended that these 23 species be clarified in the Columbia River Basin Fish and Wildlife Plan for Montana as good stewardship species under the protection aspect addressed in the Regional Power Act. Some of these species are already classified as endangered (grizzly bear), threatened (bald eagle) or national species of special emphasis (Canada goose, wood duck and osprey). We further recommend that the goals and objectives presented for these species in the **respective** federal and state management plans be incorporated into Council's Fish and Wildlife Plan. Using a good stewardship approach, each agency (Bonneville Power Administration; Bureau of Reclamation; Fish and Wildlife Service; Forest Service; Montana Department of Fish, Wildlife and Parks, National Park Service, and U.W. Army Corps of Engineers) can then pursue funding the management acceptable to that entity under good stewardship through normal budgetary channels pursuant to the Pacific Northwest Electric Power Planning and Conservation Act.

We appreciate having the opportunity to comment on the wildlife mitigation plan for Libby.

Sincerely,



**James R. Fry
Colonel, Corps of Engineers
Deputy Division Engineer**